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EXAMINER	
DESHPANDE, KALYAN K	
ART UNIT	**PAPER NUMBER**
3623	

DATE MAILED: 10/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/963,960	BURKHARDT ET AL.	
	Examiner	Art Unit	
	Kalyan K. Deshpande	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 September 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. The following is a non-final office action in response to the communications received on September 25, 2001. Claims 1-27 are now pending in this application.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 1, 2, 4, 7-11, 13, 16-20, 22, and 25-27 are rejected under 35 U.S.C. 102(a) as being anticipated by Jameson (U.S. Patent No. 6, 219, 649).

As per claim 1, Jameson teaches:

A method for solving a supply chain planning problem, comprising the steps of:

Dividing the supply chain planning problem into a plurality of sub-problems (see column 7 lines 45-54; where the allocation problem is divided in to simpler sub-problems);

Forming a plurality of sub-problem partitions, each of said sub-problem partitions including a plurality of related items and associated with a respective sub-problem (see column 7 lines 45-54 and column 8 lines 19-21; where the system accounts for larger sub-problems. Sub-problem partitions are defined as larger sub-problems per the

specification. See specification p. 9 line 16. Further, clusters are combined to create larger clusters or larger sub-problems. The sub-problems consist of scenarios, where a scenario is a set of related events);

Loading data into a plurality of database partitions, said data associated with said plurality of related items, and each of said database partitions associated with a respective one of each of said sub-problem partitions (see column 5 lines 35-40, column 7 line 25, column 11 lines 3-15, column 18 lines 49-56 and column 29 lines 35-57; where separate matrices contain variables for each scenario. Each matrix contains rows and columns to hold data elements. The matrices, also having a separate memory portion, are a database partitions.); and

Solving each of said plurality of said sub-problems (see column 8 lines 8-25; where the sub-problems are solved to determine the optimal allocation point).

As per claim 2, Jameson discloses:

The method of Claim 1, further comprising the steps of:

Forming a plurality of clusters, each of said clusters including said plurality of related items (see column 8 lines 5-12; where optimal points are clustered and the clusters include the scenario, where scenarios are a set of related events); and

Forming said plurality of sub-problem partitions from said plurality of clusters (see column 7 lines 45-54 and column 8 lines 19-21; where the system accounts for larger sub-problems. Sub-problem partitions are defined as larger sub-problems per the specification. See specification p. 9 line 16. Further, clusters are combined to create larger clusters or larger sub-problems. The sub-problems consist of scenarios, where a scenario is a set of related events).

As per claim 4, Jameson discloses:

The method of Claim 1, wherein said plurality of related items are related by one or more pre-define relationship rules (see column 10 lines 50-68, column 11 lines 1-29, and figures 6-8; where all of the elements of a scenario are processed under pre-defined rules).

As per claim 7, Jameson discloses:

The method of Claim 1, wherein the step of solving each of said plurality of said sub-problems further comprises a step of solving said plurality of sub-problems in parallel (see column 24 lines 61-67; where the use of multiple processors is desirably for the parallel execution of multiple instances of clusters).

As per claim 8, Jameson discloses:

The method of Claim 1, wherein said database partitions comprise a distributed database (see column 5 lines 35-40 and column 11 lines 3-15; where the matrices are stored on individual machines thus allowing the

matrices to be stored across several computers. A distributed database is defined as a database that be distributed to several computers.)

As per claim 9, Jameson teaches:

A method for solving a supply chain planning problem, comprising the steps of:

Storing data associated with at least one new item in a temporary database location (see column 5 lines 35-40, column 7 line 25, column 11 lines 3-15, column 18 lines 49-56 and column 29 lines 35-57; where separate matrices contain variables for each scenario. Each matrix contains rows and columns to hold data elements. The matrices, also having a separate memory portion, are a database partitions.);

Forming at least one cluster, said at least one cluster including said data associated with said at least one item (see column 8 lines 5-12; where optimal points are clustered and the clusters include the scenario, where scenarios are a set of related events);

Merging said at least one cluster with at least one cluster associated with at least one sub-problem partition (see column 7 lines 45-54 and column 8 lines 19-21; where the system accounts for larger sub-problems. Sub-problem partitions are defined as larger sub-problems per the specification. See specification p. 9 line 16. Further, clusters are combined to create larger clusters or larger sub-problems. The sub-

problems consist of scenarios, where a scenario is a set of related events);

Loading said data into at least one database partition, said at least one database partition associated with said at least one sub-problem partition (see column 5 lines 35-40, column 7 line 25, column 11 lines 3-15, column 18 lines 49-56 and column 29 lines 35-57; where separate matrices contain variables for each scenario. Each matrix contains rows and columns to hold data elements. The matrices, also having a separate memory portion, are a database partitions.); and

Solving said at least one sub-problem (see column 8 lines 8-25; where the sub-problems are solved to determine the optimal allocation point).

As per claim 10, Jameson discloses:

A system for solving a supply chain planning problem comprising:

A database, said database including a plurality of partitions, each partition of said plurality of partitions associated with a respective sub-problem of said supply chain planning problem (see column 5 lines 35-40, column 7 line 25, column 11 lines 3-15, column 18 lines 49-56 and column 29 lines 35-57; where separate matrices contain variables for each scenario. Each matrix contains rows and columns to hold data elements. The matrices, also having a separate memory portion, are a database partitions.); and

A plurality of processors, each processor of said plurality of processors associated with a respective partition of said plurality of partitions, said plurality of processors being collectively operable to (see column 24 lines 61-67; where the use of multiple processors is desirably for the parallel execution of multiple instances of clusters):

Form a plurality of sub-problem partitions, each of said sub-problem partitions including a plurality of related items, and each of said database partitions associated with a respective sub-problem (see column 7 lines 45-54 and column 8 lines 19-21; where the system accounts for larger sub-problems. Sub-problem partitions are defined as larger sub-problems per the specification. See specification p. 9 line 16. Further, clusters are combined to create larger clusters or larger sub-problems. The sub-problems consist of scenarios, where a scenario is a set of related events);

Load data into a plurality of database partitions, said data associated with said plurality of related items, and each of said database partitions associated with a respective one of each of said sub-problem partitions (see column 5 lines 35-40, column 7 line 25, column 11 lines 3-15, column 18 lines 49-56 and column 29 lines 35-57; where separate matrices contain variables for each scenario. Each matrix contains rows and columns to hold data elements. The

matrices, also having a separate memory portion, are a database partitions.); and

Solve said plurality of said sub-problems (see column 8 lines 8-25; where the sub-problems are solved to determine the optimal allocation point).

As per claim 11, Jameson teaches:

The system of Claim 10, said plurality of processors further being collectively operable to:

Form a plurality of clusters, each of said clusters including said plurality of related items (see column 8 lines 5-12; where optimal points are clustered and the clusters include the scenario, where scenarios are a set of related events); and

Form said plurality of sub-problem partitions from said plurality of clusters (see column 7 lines 45-54 and column 8 lines 19-21; where the system accounts for larger sub-problems. Sub-problem partitions are defined as larger sub-problems per the specification. See specification p. 9 line 16. Further, clusters are combined to create larger clusters or larger sub-problems. The sub-problems consist of scenarios, where a scenario is a set of related events).

As per claim 13, Jameson discloses:

The system of Claim 10, wherein said plurality of related items are related by one or more pre-defined relationship rules (see column 10 lines

50-68, column 11 lines 1-29, and figures 6-8; where all of the elements of a scenario are processed under pre-defined rules).

As per claim 16, Jameson discloses:

The system of Claim 10, wherein each of said plurality of processors is further operable to:

Solve said plurality of sub-problems in parallel (see column 24 lines 61-67; where the use of multiple processors is desirably for the parallel execution of multiple instances of clusters).

As per claim 17, Jameson teaches:

The system of Claim 10, wherein said database partitions comprise a distributed database (see column 5 lines 35-40 and column 11 lines 3-15; where the matrices are stored on individual machines thus allowing the matrices to be stored across several computers. A distributed database is defined as a database that be distributed to several computers.)

As per claim 18, Jameson teaches:

A system for solving a supply chain planning problem, comprising:

A database, said database comprising a plurality of partitions and a temporary storage location, each partition of said plurality of partitions associated with a respective sub-problem of said supply chain planning problem (see column 5 lines 35-40, column 7 line 25, column 11 lines 3-15, column 18 lines 49-56 and column 29 lines 35-57; where separate matrices contain variables for each scenario. Each matrix contains rows

and columns to hold data elements. The matrices, also having a separate memory portion, are a database partitions.); and

A plurality of processors, each processor of said plurality of processors associated with a respective partition of said plurality of partitions, said plurality of processors being collectively operable to (see column 24 lines 61-67; where the use of multiple processors is desirably for the parallel execution of multiple instances of clusters):

Store data associated with at least one new item in the temporary database location (see column 5 lines 35-40, column 7 line 25, column 11 lines 3-15, column 18 lines 49-56 and column 29 lines 35-57; where separate matrices contain variables for each scenario. Each matrix contains rows and columns to hold data elements. The matrices, also having a separate memory portion, are a database partitions.);

Form at least one cluster, said at least one cluster including said data associated with said at least one item (see column 8 lines 5-12; where optimal points are clustered and the clusters include the scenario, where scenarios are a set of related events);

Merge said at least one cluster with at least one cluster associated with at least one sub-problem partition (see column 8 lines 19-21 and column 9 lines 30-52; where two cluster allocation points are clustered in to a final larger cluster. Additional cluster allocation

points are combined as necessary with the larger cluster in order to determine the optimal allocation point);

Load said data into at least one database partition, said at least one database partition associated with said at least one sub-problem partition (see column 5 lines 35-40, column 7 line 25, column 11 lines 3-15, column 18 lines 49-56 and column 29 lines 35-57; where separate matrices contain variables for each scenario. Each matrix contains rows and columns to hold data elements. The matrices, also having a separate memory portion, are a database partitions.); and

Solve said at least one sub-problem (see column 8 lines 8-25; where the sub-problems are solved to determine the optimal allocation point).

As per claim 19, Jameson teaches:

Software for solving a supply chain planning problem, the software being embodied in computer-readable media and when executed operable to:

Divide the supply chain planning problem into a plurality of sub-problems (see column 7 lines 45-54; where the allocation problem is divided in to simpler sub-problems);

Form a plurality of sub-problem partitions, each of said sub-problem partitions including a plurality of related items and associated with a respective sub-problem (see column 7 lines 45-54 and column 8 lines 19-21; where the system accounts for larger sub-problems. Sub-problem

partitions are defined as larger sub-problems per the specification. See specification p. 9 line 16. Further, clusters are combined to create larger clusters or larger sub-problems. The sub-problems consist of scenarios, where a scenario is a set of related events);

Load data into a plurality of database partitions, said data associated with said plurality of related items, and each of said database partitions associated with a respective one of each of said sub-problem partitions (see column 5 lines 35-40, column 7 line 25, column 11 lines 3-15, column 18 lines 49-56 and column 29 lines 35-57; where separate matrices contain variables for each scenario. Each matrix contains rows and columns to hold data elements. The matrices, also having a separate memory portion, are a database partitions.); and

Solve each of said plurality of said sub-problems (see column 8 lines 8-25; where the sub-problems are solved to determine the optimal allocation point).

As per claim 20, Jameson teaches:

The software of Claim 19, when executed further operable to:

Form a plurality of clusters, each of said clusters including said plurality of related items (see column 8 lines 5-12; where optimal points are clustered and the clusters include the scenario, where scenarios are sub-problems); and

Form said plurality of sub-problem partitions from said plurality of clusters (see column 7 lines 45-54 and column 8 lines 19-21; where the system accounts for larger sub-problems. Sub-problem partitions are defined as larger sub-problems per the specification. See specification p. 9 line 16. Further, clusters are combined to create larger clusters or larger sub-problems. The sub-problems consist of scenarios, where a scenario is a set of related events).

As per claim 22, Jameson teaches:

The software of Claim 19, wherein said plurality of related items are related by one or more pre-defined relationship rules (see column 10 lines 50-68, column 11 lines 1-29, and figures 6-8; where all of the elements of a scenario are processed under pre-defined rules).

As per claim 25, Jameson teaches:

The software of claim 19, wherein solving each of said plurality of said sub-problems further comprises solving said plurality of sub-problems in parallel (see column 24 lines 61-67; where the use of multiple processors is desirably for the parallel execution of multiple instances of clusters).

As per claim 26, Jameson teaches:

The software of claim 19, wherein said database partitions comprise a distributed database (see column 5 lines 35-40 and column 11 lines 3-15; where the matrices are stored on individual machines thus allowing the

matrices to be stored across several computers. A distributed database is defined as a database that be distributed to several computers.)

As per claim 27, Jameson teaches:

Software for solving a supply chain planning problem, the software being embodied in computer-readable media and when executed operable to:

Store data associated with at least one new item in a temporary database location (see column 7 line 25, column 11 lines 3-6, and column 29 lines 35-57; where separate matrices contain variables for each scenario. Each matrix, having a separate memory portion, is a database partition and each scenario is a sub-problem.);

Form at least one cluster, said at least one cluster including data associated with said at least one item (see column 7 lines 45-54; where the system accounts for larger sub-problems. The larger sub-problems are partitions per the definition of partitions in the specification. See specifications p. 9 line 16. The sub-problems consist of scenarios, where scenarios are a set of related events);

Merge said at least one cluster with at least one cluster associated with at least one sub-problem partition (see column 8 lines 19-21; where two cluster allocation points are clustered in to a final larger cluster);

Load said data into at least one database partition, said at least one database partition associated with said at least one sub-problem partition (see column 7 line 25, column 11 lines 3-6, and column 29 lines 35-57;

where separate matrices contain variables for each scenario. Each matrix, having a separate memory portion, is a database partition and each scenario is a sub-problem.); and

Solve said at least one sub-problem (see column 8 lines 8-25; where the sub-problems are solved to determine the optimal allocation point).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3, 5, 6, 12, 14,15, 21, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jameson (U.S. Patent No. 6, 219, 649).

As per claim 3 Jameson teaches:

The method of Claim 1, wherein the number of sub-problems and database partitions is equal to the number of scenarios introduced to the allocation problem (see column 7 lines 66-67 and column 8 lines 1-8; where the optimal allocation problem is solved for each scenario. The provided example has four sub-problems or scenarios).

Jameson fails to teach:

The method of Claim 1, wherein the number of sub-problems and database partitions is equal to three.

The specific example taught by Jameson has four sub-problems and database partitions. The three sub-problems recited by this invention is contained within the four taught by Jameson. Further, Jameson teaches the number of sub-problems is equal to the number of scenarios to be introduced to the planning problem. Thus, the Jameson system can have three scenarios resulting in three sub-problems for a given planning problem. Therefore it would have been obvious, at the time of the invention, to one of ordinary skill in art to introduce three scenarios to the Jameson system to have the number of sub-problems and database partitions equal to three.

As per claim 5, Jameson teaches:

> The method of Claim 2, wherein the forming said plurality of said clusters further comprises a step of storing said clusters (see column 18 lines 49-61; where cluster arguments and function calls are stored to increase performance of future processing by calling stored results).

Jameson fails to disclose:

> The method of Claim 2, wherein the step of forming said plurality of said clusters further comprises a step of assigning a CLUSTER_ID to each item of said plurality of related items.

It is old and well-known in data management to assign an identification value to items stored in a database. The advantage of assigning an identification value to items stored in a database is that the item and its respective row can be more efficiently found in the database by simply querying the database for the assigned identification value. It would have been obvious, at the time of the invention, for one of ordinary skill in data

management to assign an identification value to the clusters stored in Jameson's system in order to more efficiently find the clusters and their stored results.

As per claim 6, Jameson teaches:

> The method of Claim 2, wherein the step of forming a plurality of sub-problems partitions from said plurality of sub-problem partitions from said plurality of clusters further comprises a step of collecting the values for specific variables resulting in each sub-problem having the same size (see column 19 line 50 – column 20 line 3; where Jameson's system is adapted to a cash management problem where each scenario or sub-problem has values specific variables).

Jameson fails to discloses:

> The method of Claim 2, wherein the step of forming a plurality of sub-problem partitions from said plurality of sub-problem partitions from said plurality of clusters further comprises a step of sizing said sub-problem partitions as close to equal as possible.

The advantage of sizing the sub-problem partitions as close to equal as possible is to maximize the efficiency of parallel processing in solving for each sub-problem, thereby increasing the efficiency of the overall system. Jameson's cash management example teaches to collect values for specific variables in order to efficiently solve for the best scenario or sub-problem. It would have been obvious, at the time of the invention, to one of ordinary skill in the art to incorporate the advantages of sizing the sub-problem partitions as close to equal as possible, by collecting values for specific

variables, to Jameson's system in order to more efficiently solve the sub-problems and increase the overall efficiency of the system.

As per claim 12, Jameson fails to teach:

> The system of Claim 10, wherein the number of sub-problems and database partitions is equal to three.

Claim 12 recites limitations already addressed by the rejection of claims 3; therefore the same rejection applies to this claim.

As per claim 14, Jameson fails to teach:

> The system of Claim 11, wherein each of said plurality of processors is further operable to:
>
> Assign a CLUSTER_ID to each item of said plurality of related items.

Claim 14 recites limitations already addressed by the rejection of claims 5; therefore the same rejection applies to this claim.

As per claim 15, Jameson fails to teach:

> The system of Claim 10, wherein each of said plurality of processors is further operable to:
>
> Size said sub-problem partitions as close to equal as possible.

Claim 15 recites limitations already addressed by the rejection of claim 6; therefore the same rejection applies to this claim.

As per claim 21, Jameson fails to teach:

> The software of Claim 19, wherein the number of sub-problems and database partitions is equal to three.

Claim 21 recites limitations already addressed by the rejection of claims 3; therefore the same rejection applies to this claim.

As per claim 23, Jameson fails to teach:

> The software of claim 20, wherein forming said plurality of said clusters further comprises assigning a CLUSTER_ID to each item of said plurality of related items.

Claim 23 recites limitations already addressed by the rejection of claims 5; therefore the same rejection applies to this claim.

As per claim 24, Jameson fails to teach:

> The software of claim 20, wherein forming a plurality of sub-problem partitions from said plurality of clusters further comprises sizing said sub-problem partitions as close to equal as possible.

Claim 24 recites limitations already addressed by the rejection of claim 6; therefore the same rejection applies to this claim.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following are pertinent to the current invention, though not relied upon:

Hegde et al. (U.S. Patent No. 6701201) teaches a resource allocation system that incorporates systematic decomposition of the allocation problem.

Huang et al. (U.S. Patent No. 5953707) teaches a supply chain system that includes a demand and supply reconciliation process, a capacity planning process, a vendor managed replenishment process, and a scenario management process.

Bhide et al. (U.S. Patent No. 5675791) teaches load balancing of a database using database partitioning and multi-processors operable in parallel.

Dietrich et al. (U.S. Patent No. 5216593) teaches a production planning and logistics system, by solving a resource allocation problem.

Ertogral et al (Ertogral, Kadir, Wu, S. David, "Auction-Theoretic Coordination of Production Planning in the Supply Chain", IIE Transactions, October, 2000, p. 931-940) teaches of an optimization system through the use of a distributed decision scheme.

Lawson et al. (Lawson, David G., Porteus, Evan L., "Multistage Inventory Management with Expediting", Operations Research, Nov/Dec 2000, p. 787-893) teaches a multistage model including additional decisions at each stage of the model.

Rao et al. (Rao, Uday, Scheller-Wolf, Alan, Tayur, Sridhar, "Development of a Rapid-Response Supply Chain at Caterpillar", Operations Research, Mar/Apr 2000, p. 189-204) teaches network flow, inventory and simulation theories using decomposition.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kalyan K. Deshpande whose telephone number is (571)272-5880. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KKD
kkd

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